

EVALUATION REPORT OF THE UNIT  
LBMCE - Laboratoire de biologie moléculaire et  
cellulaire des eucaryotes

UNDER THE SUPERVISION OF THE  
FOLLOWING ESTABLISHMENTS AND  
ORGANISMS:

Sorbonne Université - Sorbonne U,  
Centre national de la recherche scientifique -  
CNRS

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**EVALUATION CAMPAIGN 2023-2024**  
GROUP D

Rapport publié le 22/03/2024



In the name of the expert committee :

Philippe Huber, Chairman of the committee

For the Hcéres :

Stéphane Le Bouler, acting president

Pursuant to articles R. 114-15 and R. 114-10 of the Research Code, the evaluation reports drawn up by the expert committees are signed by the chairmen of these committees and countersigned by the President of Hcéres.

This report is the result of the unit's evaluation by the expert committee, the composition of which is specified below. The appreciations it contains are the expression of the independent and collegial deliberation of this committee. The numbers in this report are the certified exact data extracted from the deposited files by the supervising body on behalf of the unit.

**This version of the report is confidential under Decree No. 2021-1537 of November 29, 2021. The parts considered confidential and the responses to the points of attention of the supervising bodies will not appear in the public version of the report available on the Hcéres website.**

## MEMBERS OF THE EXPERT COMMITTEE

### Chairperson:

Mr Philippe Huber, CEA - Commissariat à l'énergie atomique et aux énergies alternatives, Grenoble

### Experts:

Ms Marion Dalmais, Inrae - Institut national de recherche pour l'agriculture, l'alimentation et l'environnement, Gif-sur-Yvette

Mr Jean-Michel Jault, CNRS - Centre national de la recherche scientifique, Lyon

Mr Gianni Liti, Institute for Research on Cancer and Ageing of Nice - Ircan

Ms Julie Soutourina, CEA, Gif-sur-Yvette

Mr Alain Zider, Université Paris-Cité

## HCÉRES REPRESENTATIVE

Ms Catherine Etchebest

## REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Philippe Agard, Sorbonne University

Cécile Bousquet-Antonelli, CNRS

## CHARACTERISATION OF THE UNIT

- Name: Laboratoire de biologie moléculaire et cellulaire des eucaryotes
- Acronym: LBMCE
- Label and number: UMR 8226
- Number of teams: 5
- Composition of the executive team: Mr Lionel Bénard, PI; Mr Mickael Cohen, PI ; Mr Philippe Meyer, PI ; Ms Maria Teresa Teixeira, PI, Director of the Unit

## SCIENTIFIC PANELS OF THE UNIT

SVE Sciences du vivant et environnement

SVE3 Molécules du vivant, biologie intégrative (des gènes et génomes aux systèmes), biologie cellulaire et du développement pour la science animale

## THEMES OF THE UNIT

The Unit aims at understanding new cellular mechanisms in eukaryotic cells, using the yeast *Saccharomyces cerevisiae* and the green alga *Chlamydomonas reinhardtii* as model organisms. More specifically, the Unit studies mRNA stability and the formation of RNA-protein aggregates (Team 1), the fusion and fission of mitochondrial membranes (Team 2), the photosynthetic carbon fixation pathway (Team 3), the processing of client proteins by chaperones (Team 4) and the role of telomere shortening in cancer (Team 5).

## HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

The LBMCE Unit belongs to the Institut de Biologie Physico-Chimique (IBPC) created in 1930. Five new teams recruited in 2009 assembled to create the LBMCE, first recognised as FRE3354 and then as UMR8226 by the CNRS and Pierre et Marie Curie University, now called Sorbonne University. The former director, Stéphane Lemaire (Team 3 PI), was replaced by Maria Teresa Teixeira (Team 5 PI) for the last five-year contract. There is no deputy director because of the small size of the unit. Mickael Cohen (Team 2 PI) will take over the direction of the Unit in the next contract. Team 3, directed by Stéphane Lemaire, left in 2021 for another institute in Paris, and the present Unit, as in the current application for the next contract, is composed of four teams.

The LBMCE is located in the IBPC building, ruled by the CNRS, in the centre of Paris.

## RESEARCH ENVIRONMENT OF THE UNIT

The IBPC is a Fédération de Recherche (FR550), hosting four other units, all associated with the CNRS and investigating various domains in biology, including bacterial genetics, membrane biology and theoretical biochemistry. The IBPC possesses shared technical platforms for crystallography, NMR, mass spectrometry and functional genomics. The LBMCE is also part of the labex Dynamo gathering units at the Collège de France and at the Ecole Normale Supérieure, strengthening the interactions with these labs and giving access to their platforms of heavy equipment. In addition, the LBMCE is part of the Equipex 'Centre for the Analysis of Complex Systems in Complex Environments – Cacsice', providing a structural biology analysis platform to its partners.

## UNIT WORKFORCE: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	3
Directeurs de recherche et assimilés	3
Chargés de recherche et assimilés	2
Personnels d'appui à la recherche	7
<b>Sous-total personnels permanents en activité</b>	<b>16</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	5
Doctorants	6
<b>Sous-total personnels non permanents en activité</b>	<b>11</b>
<b>Total personnels</b>	<b>27</b>

## DISTRIBUTION OF THE UNIT'S PERMANENTS BY EMPLOYER: in physical persons at 31/12/2022. Non-tutorship employers are grouped under the heading 'others'.

Nom de l'employeur	EC	C	PAR
CNRS	0	5	6
SORBONNE UNIVERSITÉ	3	0	1
<b>Total personnels</b>	<b>3</b>	<b>6</b>	<b>7</b>

## GLOBAL ASSESSMENT

LBMCE is a modest-sized unit composed of four teams since 2021 when one of the teams left. The Unit works on various aspects of the eukaryotic cellular machinery using *S. cerevisiae* as unique model since Team 3 departure. Each team project is highly relevant, and may have societal impacts, including the capacity of carbon fixation by microalgae, the role of telomere shortening in tumour induction and perspectives in mitochondrial diseases. The approaches are complementary, from cellular to structural biology, with strong support from bioinformatics. Their scientific environment in the centre of Paris is outstanding, and the Unit is connected to other major local units through the labex Dynamo. The Unit website is clear, informative and up-to-date. The main weakness of the Unit is the limitation of lab space. This is the reason why Team 3 left LBMCE, as the team was growing and expansion was impossible. Even with the departure of Team 3, lab space remains very limited and teams are scattered in the building, perturbing experimental work.

The Unit collaborates with several national and international teams, as attested by common publications, and members are invited in national and international meetings. The unit organised several meetings, mostly international, and the young researchers obtained numerous prizes after oral or poster presentations. The Unit secured a large number of grants from PIA, INCa, ANR, the labex Dynamo and charities, demonstrating their capacity to obtain highly competitive funding. During the last contract, they hired several PhD students (12) and postdoctoral students (15) supported by funding mentioned above. Altogether, the attractiveness of LBMCE is excellent.

The management and functioning of the Unit are remarkable. The Unit complies with the standard rules for laboratory management. Unit cohesion is promoted by weekly internal seminars, followed by discussion on lab functioning, and two retreats were organised, focusing on lab carbon footprint and scientific integrity. Common services are available: a lab manager for administrative work, a media preparation service, stores for common materials and reagents, funded with recurrent subsidies and with participation from team contracts, and a bioinformatics support for analysis of complex datasets.

The scientific production is excellent. The Unit published 60 articles including reviews, with some in high-range journals: Nat Comm (3), Autophagy (2), Mol Plant, PNAS (2), Genes & Dev, Nat Meth, Mol Biol Evol, Redox Biol (2), either as main authors or as collaborators. They also published articles in specialised journals: Cell & Biosci, Plant J, Antioxidants (2), Plant Phys (2), Antioxidants Redox Signal, Structure. Unit members participated to management boards and recruitment committees of French scientific organisations, of several universities, of CNRS and Inserm. They also served as reviewers for national and international grants and four Unit researchers are editorial board members of specialised journals. Contribution to scientific education was provided mainly by the six assistant professors of the Unit and participation of some researchers.

The Unit obtained a major success in developing technologies of DNA digital storage. This innovative technique allowing the encoding of texts on DNA was published in two patents, and a start-up was created. This innovation was largely publicised to the lay public. Other outreach activities include TV shows to explain the profession of scientists or scientific vulgarisation programs. Team members also participated in various vulgarisation meetings with the lay public or with students. Altogether, their capacity to interact with the socio-economic world and the general public is outstanding.

## DETAILED EVALUATION OF THE UNIT

### A – CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

*Making efforts on publications for some teams to better disseminate interesting results*

Most teams published high-quality results in the last contracts; one team should still make efforts in that direction.

*More interactions with the lay public and prospective students*

*Better visibility to increase PhD student and postdoctoral fellows' recruitment*

The Unit created a new website, which is well presented and up-to-date. The Unit is also present on social media (Facebook page and Twitter account). The limited number of students seems more related to the number of possible supervision by HDR than to a lack of attractiveness of the lab. However, the number of postdoctoral students increased, owing to the success of the labex Dynamo to the EU granting Cofund project.

*Creation of a scientific advisory board*

This recommendation was considered by the Unit, but not followed because of its small size.

*Interaction with neighbouring units of IBPC*

*Specific activities to promote collaborations between teams*

Interaction between IBPC units was promoted by meetings organised by IBPC, as well as the labex Dynamo. In addition, the LBMCE organised two retreats to stimulate collaborations between teams. The setting of effective collaborations is demonstrated by grants obtained by two teams from the Unit, common publications and collaborative projects.

### B – EVALUATION AREAS

Considering the references defined in the unit's evaluation guidelines, the committee ensures that a distinction is made on the outstanding elements for strengths or weaknesses. Each point is documented by observable facts including the elements from the portfolio. The committee assesses if the unit's results are consistent with its activity profile.

#### EVALUATION AREA 1: PROFILE, RESOURCES AND ORGANISATION OF THE UNIT

##### Assessment on the scientific objectives of the unit

This is a relatively young and active unit centred on molecular mechanisms in eukaryotic cells. However, the team topics are distributed in different scientific fields, which makes inter-team collaboration difficult, but not impossible as demonstrated by common publications and funding. The Unit was composed of five teams until the largest team – Team 3 – left in 2021. Evolution of Unit scientific and human potential during the last contract was variable among teams. One of the main issues is that this small unit cannot extend because of lab space limitations.

##### Assessment on the Unit's resources

Each team is composed of a PI along with a PAR and 0, one, or three researchers/assistant professors/team. A large number of postdoctoral students were recruited, as well as some PhD students, which provided a balanced proportion of permanent and short-term positions. The recruitment of one researcher in addition to the PI in each team would increase the scientific potential of each topic. The Unit obtained a large amount of funding from different sources (ANR, labex, charities and even European funds) in addition to recurrent subsidies, which contributes to the unit functioning and temporary staff hiring.

## Assessment on the functioning of the Unit

The functioning of the Unit is remarkable. It complies with rules on management, recruitment and safety in all aspects. The Unit set up common services (one administrative executor, one bioinformatician and one technician) and a store with common consumables and reagents fuelled by Unit recurrent subsidies and parts of external funding, hence levelling the funding of each team. The Unit also makes good use of the IBPC platforms, and actively collaborates with a bioinformatician located in another IBPC lab.

### *1/ The unit has set itself relevant scientific objectives.*

#### Strengths and possibilities linked to the context

The main objective of the Unit is to study cellular and molecular mechanisms in eukaryotic cells. Each team project fits in this objective is highly relevant and scientifically sound. Some of these topics have direct societal interests, including the capacity of carbon fixation by microalgae, the role of telomere shortening in tumour induction and perspectives in mitochondrial diseases. Inter-team collaborations were initiated successfully in terms of publications and funding. Although the five (now four) teams are scattered in the building, Unit members organise weekly meetings for internal scientific presentations and lab organisation. External invitations for seminars was interrupted because of the Covid crisis and did not resume. The administrative service set up a dematerialised operative system. A media preparation service is available and stores for common materials and reagents were organised and funded with recurrent subsidies from the supervising bodies and with participation withdrawn from team contracts. This organisation is remarkable and provides every team with all necessary consumables, independent of its own financing. Common services include bioinformatic analysis of complex datasets, seminar organisation, and maintenance of various equipment ... all in charge by specific Unit members. In conclusion, efforts are made to increase scientific coherence and collaborations within the Unit and with other IBPC labs.

#### Weaknesses and risks linked to the context

The Unit is small and the number of permanent staff is low. This is particularly true since the departure of the largest team (Team 3; 6 permanent staff) in 2021, providing some extra space for each team, but decreasing the critical mass of the unit. Because of lack of lab space, there is no possibility to host another team in the near future. In addition, the Unit and its equipment are distributed in two different floors, which does not make experiments and communication easy, especially for Team 1.

Team activity is also slowed down by the administrative capacity of the CNRS delegation that is overwhelmed. A simplification procedure is considered; in that respect, supplementary administrative work might be relocated at the Unit level, adding the charges to the Unit staff.

Another main issue is the scattering of the team scientific thematics, even if the PIs make strong efforts to collaborate on specific projects. Hence, the scientific progress made in one team, or its biological tools, are not directly helpful to the other teams.

### *2/ The unit has resources adapted to its activity profile and research environment, and makes use of them..*

#### Strengths and possibilities linked to the context

Since the last contract, the head of Team 5 was appointed director of the Unit. The DU is assisted by an administrative manager. Two other common staff are present: a bioinformatician and a technician for media preparation. The Team PIs are CNRS DR (Team 1, 2, 3, 5) or CR (Team 4). Two PARs (IR, IE) have been recruited during the last contract and one PAR was promoted from AI to IE. At the end of 2022, a PAR (AI, IE or IR) was present in each team, indicating a rational distribution of the technical staff. Researchers or assistant professors are also present in most teams (2 MCF in Team 1, 1 CR in Team 2, 3 MCF in Team 3 and 1 MCF in Team 5). One or two HDRs are present in each team, allowing the recruitment of twelve PhD students; six of them being still in the lab. Altogether, fifteen postdoctoral students were hired during the last contract, which is a high number for a unit of this size. The composition of team staff is thus well balanced between permanent and temporary positions.

The Unit received 106 k€/year in average from the CNRS and Sorbonne University, and obtained 727 k€/year in average from external resources, mostly from PIA, ANR, INCa and charities (FRM...). This is an excellent funding level for a Unit of this size.



The Unit has some shared equipment (microscope and others), that were mainly bought by the Unit external funding, upon the decision of the Unit Council. The IBPC provides common platforms for structural biology and bioinformatics, which seems very helpful for some of the Unit projects.

### Weaknesses and risks linked to the context

More HDR could be obtained to increase the capacity to hire PhD students.

*3/ The unit's practices comply with the rules and directives laid down by its supervisory bodies in terms of human resources management, safety, the environment, ethical protocols and the protection of data and scientific heritage.*

### Strengths and possibilities linked to the context

For its functioning, the Unit complies with the standard rules for laboratory management, with a Scientific Council composed of the director and the PIs, meeting every week, and a Laboratory Council with a representative of all staff categories, meeting every four months. The Unit implemented all the CNRS rules for hiring staff with short-term contracts in terms of announcements and auditions. The Unit organised two retreats outside of Paris to increase interactions between teams. One of the retreat topics was ethics and scientific integrity. The second lab retreat was on sustainable development. They evaluated the greenhouse gas emissions of the Unit, and they reduced plastic consumption using glass tubes and adopted a number of recycling habits. All risks are managed properly and reference documents (a welcome booklet in French or English describing IBPC rules, health and security information) are distributed to the Unit staff. Official lab books are provided by the CNRS. Three PARs were promoted during the contract, showing that the staff carrier is taken into consideration. Interviews with the different staff categories during the visit further indicated a very efficient and humane management of the Unit at all levels.

### Weaknesses and risks linked to the context

The capacity to store raw data is very limited, or their possible storage at IBPC and CNRS are already filled, with no plan to obtain extensions in the near future.

## EVALUATION AREA 2: ATTRACTIVENESS

### Assessment on the attractiveness of the unit

The Unit has a national, and for some teams an international reputation, as demonstrated by numerous invitations to national and international meetings, meeting organisation, as well as several effective collaborations with national and international labs. A large number of postdoctoral students (15) were recruited, further showing its attractiveness. Five assistant professors were present until 2021 (two after) with high teaching duties, contributing to student education in biology. The Unit obtained numerous grants, mostly from ANR, labex and charities, and one European grant, frequently as coordinators.

*1/ The unit has an attractive scientific reputation and is part of the European research area.*

*2/ The unit is attractive because for the quality of its staff support policy.*

*3/ The unit is attractive through its success in competitive calls for projects.*

#### 4/ The unit is attractive for the quality of its major equipment and technical skills.

##### Strengths and possibilities linked to the context for the four references above

The Unit has a solid international reputation demonstrated by invitations to scientific meetings (11 international), and by obtaining of numerous prizes (5 best posters at national and international meetings). The Unit organised or co-organised eighteen meetings, mostly international, and Unit members participated to national and international meetings, as indicated by poster (18) or oral (26) presentations. Networking is also highlighted by collaborative publications with French and foreign labs.

Unit members participated to the management board of French scientific organisations, to the scientific council of Sorbonne University and to thesis and HDR committees (19). They were part of the evaluation and recruitment committees in various universities, at Inserm and CNRS. They also served as reviewers for national and international grants (11). Four Unit researchers are editorial board members of specialised journals.

The Unit obtained an impressive number of national grants (15) – the majority from ANR or the labex Dynamo – , and mostly as coordinator; one European grant as a partner and eight grants from charities. Part of this funding was used to hire short-term technicians or postdoctoral students. The high number of postdoctoral students (15) recruited during the last contract is also indicative of Unit attractiveness. One of the previous postdoctoral fellows in the lab obtained a researcher position at the CNRS, and later created its own lab at LCQB, IBPS, Sorbonne Université, and is still collaborating with the unit.

Contribution to teaching is major, because of the presence of six assistant professors, and the contribution of researchers.

##### Weaknesses and risks linked to the context for the four references above

Because of thematic scattering between teams, each team has its own network within its scientific field, and notable variations of reputation exist between teams.

### EVALUATION AREA 3: SCIENTIFIC PRODUCTION

#### Assessment on the scientific production of the unit

The Unit published 60 articles including reviews, with some in high-range journals: Nat Comm (3), Autophagy (2), Mol Plant, PNAS (2), Genes & Dev, Nat Meth, Mol Biol Evol, Redox Biol (2), either as main authors or as collaborators. They also published articles in specialised journals: Cell & Biosci, Plant J, Antioxidants (2), Plant Phys (2), Antioxidants Redox Signal, Structure. Most of them are in open access and in HAL. This is thus an excellent publication level for a unit of this size. The Unit staff was made aware of ethics rules and scientific integrity.

1/ The scientific production of the unit meets quality criteria.

2/ The unit's scientific production is proportionate to its research potential and properly shared out between its personnel.

3/ The scientific production of the unit complies with the principles of research integrity, ethics and open science. It complies with the directives applicable in this field.

##### Strengths and possibilities linked to the context for the three references above

Some major results have been obtained by the Unit, such as the determination of molecular mechanisms in the No-Go decay mRNA process, of ubiquitin role in mitochondrial fusion, of *C. reinhardtii* thioredoxome in redox regulation, of glutathionylation in the formation of GAPDH aggregates and of the adaptation pathway in senescent cells leading to genome instability. These data have been published with Unit members in leader positions in high-range journals (Nature Communications – 2 –, Autophagy, Molecular Plant, PNAS, Genes & Development). They participated as collaborators to high-level publications, such as PNAS, Nature Methods,

Autophagy, Nature Communications, Molecular Biology and Evolution and Redox Biology. They also published important results as leaders in middle-high journals, including Frontiers in Plant Science, Scientific Reports, Structure, Antioxidants, Plant Journal, Cells, Antioxidants and Redox Signalling, and others in similar journals as collaborators. Altogether, they published or co-published 60 articles including reviews, which is proportionate to a unit of this size.

All researchers, except one, published original articles either as leader or co-author. Six postdoctoral students who left the Unit were co-authors, while four were non-publishers. Previous PhD students had 2.3 papers in average after their stay in the lab, with at least one as first author, and six PARs were co-authors of one or several papers. Altogether, the work of PhD students and PARs is well recognised in the publication activity. As an incentive measure to publish in high-range journal, half of the article processing charge is paid by the Unit if the journal impact factor is above 4.

As mentioned above, all staff is made aware of ethics in science and scientific integrity. Most publications are available in HAL repository.

Weaknesses and risks linked to the context for the three references above

Four postdoctoral students left the unit without publishing, which may compromise their future career.

## EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

### Assessment on the inclusion of the unit's research in society

The Unit obtained a major success by developing technologies of DNA digital storage. This innovative technique allowing the encoding of texts on DNA was published and protected in two patents, and a start-up was created. This development gave rise to numerous interviews on TV, radios, in journals. Unit members were also present in TV or radio shows to share experiences with the general public or participated to various public events targeting young students. Altogether, the Unit showed an outstanding technological creativity and an outstanding capacity of interaction with the general public.

- 1/ The unit stands out for the quality and the amount of its interactions with the non-academic world.*
- 2/ The unit develops products for the cultural, economic and social world.*
- 3/ The unit shares its knowledge with the general public and takes part in debates in society.*

Strengths and possibilities linked to the context for the three references above

Most topics investigated in the Unit are in the field of basic research. However, Team 3 contributed to the socio-economic world by filing two patents on two technologies of DNA digital storage and by creating one start-up in 2021, called Biomemory, based on these technologies. These innovations gave rise to many interactions with the general public (most public TV and radios, in the general press, in vulgarisation journals in the internet, in France and abroad). As proof-of-concept, the Déclaration de l'homme et du citoyen and the Déclaration de la femme et de la citoyenne were encoded on DNA and deposited in the Archives Nationales, which was the first deposit of such matter in a public repository. Altogether, this was a major success of translational research for the Unit.

One Team 2 members participated in numerous TV or radio shows, available in the internet, to share her experience as a researcher and to explain some recent research data to the general public.

Unit members participated to various public events, such as La Fête de la Science, La bio au Labo, Ma vie de chercheur... They intervened in high schools and interacted with high school teachers.

Weaknesses and risks linked to the context for the three references above

Even if focused on basic research, more interactions with the general public in other scientific domains could be undertaken, for example, at the interface of senescence and cancer, or RNA and cancer. Similarly, more interactions with clinical labs could be developed.

## ANALYSIS OF THE UNIT'S TRAJECTORY

For the Unit governance, the previous mode of organisation will be maintained by the new director. As the organisation was excellent in terms of management, human resource policies, scientific animation as well as health and safety, it seems reasonable to preserve this mode of functioning.

## RECOMMENDATIONS TO THE UNIT

### Recommendations regarding the Evaluation Area 1: Profile, Resources and Organisation of the Unit

The committee recommend pursuing the excellent functioning mode of the Unit. We urge the director to continue the discussions with the CNRS and IBPC to consolidate in the same environment the space allocated to the Unit, and possibly with an extension.

We recommend inviting scientists for seminars. Although Unit members have the opportunity to attend excellent seminars nearby in Paris, invitations of external scientists to LBMCE are also the opportunity to establish collaborations and to give the opportunity to young researchers to meet external scientists in their field.

### Recommendations regarding the Evaluation Area 2: Attractiveness

Although hiring a new team is currently impossible because of lab space, It is, however, still possible to recruit a few permanent staff within teams. We thus encourage team leaders to search further for high-level candidates for CNRS or University positions, or to attract permanent researchers by mobility.

### Recommendations regarding Evaluation Area 3: Scientific Production

The committee members encourage the researchers to continue and even progress in their publication level, and we urge the Team 4 leader to conclude its ongoing projects and to publish its results.

### Recommendations regarding Evaluation Area 4: Contribution of Research Activities to Society

Outreach activities should be maintained, and possible interaction with the clinic is recommended whenever possible.

## TEAM-BY-TEAM OR THEME ASSESSMENT

**Team 1:** Functional regulation and Surveillance of RNA  
 Name of the supervisor: Mr Lionel Benard

### THEMES OF THE TEAM

The research work of the team 'Functional regulation and Surveillance of RNA' is focused on the RNA metabolism in a model eukaryote, the budding yeast *Saccharomyces cerevisiae*. In particular, they are interested in post-transcriptional mechanisms of mRNA surveillance called No Go Decay (NGD) that can be triggered by intermolecular pairing between RNAs and results in degradation of mRNA contained blocked ribosomes. The team is also studying the implication of RNA-protein aggregates such as RNA granules named oxidised RNA bodies (ORB) in these mechanisms. More generally, ongoing projects are dedicated to different ribosome-associated quality controls.

### CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The specific recommendations made for the team in the previous evaluation were mainly the needs to work on securing funding and human resources for their research. These recommendations were addressed by the team. As indicated in part 1.6 to favour the development of Team 1, office space was increased after the departure of Team 3, the team is better funded with ANR 2022 as partner and now also with ANR 2023 as coordinator, and benefited from the arrival of an assistant professor since 2018 and 100% presence of an AI.

### WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	2
Directeurs de recherche et assimilés	1
Chargés de recherche et assimilés	0
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>4</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	0
Doctorants	1
<b>Sous-total personnels non permanents en activité</b>	<b>1</b>
<b>Total personnels</b>	<b>5</b>

## EVALUATION

### Overall assessment of the team

The team performs original projects on RNA surveillance and ribosome-associated controls. It has very good to excellent scientific production with six articles (leading position in Nature Com 2020, Mol Biol Evol 2020), (co-author in J Cell Sci 2022), and a very good to excellent attractiveness (assistant professor arrival). Since the contract beginning, the external funding has improved (ANRs partner and coordinator, labex Dynamo, Cofund), allowing for the recruitment of PhD students and postdoctoral students. Participation in scientific meetings and scientific vulgarisation needs improvement.

### Strengths and possibilities linked to the context

During the evaluation period, the team has a very good to excellent scientific production with six articles in total including two main publications with PI as corresponding (Nature Com 2020) or co-corresponding author (Mol Biol Evol 2020) and one publication within international collaboration with Canada (J Cell Sci 2022), as well as two from the previous work of a team member who joined the team in 2019. In particular, the team contributed to No Go Decay mRNA cleavage mechanisms with publication in Nature Com in 2020 signed as a co-first author by their PhD student. A postdoctoral student signed as a first author a paper in Mol Biol Evol 2020 in collaboration within the same institute IBPC on the implication of RNA duplexes in modulation of gene expression. All team members participated in publications of the team.

The team demonstrated a very good to excellent attractiveness with a welcome in 2019 of a new assistant professor and expert in genetics, one PhD student that defended in 2020, one postdoctoral student, as well as one ongoing PhD and one postdoctoral student project. The PI had three invitations to a conference at the national level (labex Dynamo, SifrARN, Sorbonne University). The PI showed his capacity to obtain funding (ANR 2022 as partner, labex Dynamo support, Cofund postdoctoral fellowship and now also ANR 2023 as coordinator). Participation of the PI and the assistant professor in expertise committees, thesis and HDR juries, as well as teaching activities contributed to increasing the visibility and attractiveness of the team. Within the unit, the PI is the European and international correspondent of the unit and is responsible for the organisation of external seminars.

No information is provided for vulgarisation and industry transfer in the report. With the activities of two assistant professors, this aspect can be considered as very good.

### Weaknesses and risks linked to the context

There are only two main publications from the team as corresponding and first authors for the five-year period.

The funding remains rather limited during the period (ANR 2022 as partner, labex Dynamo support, Cofund postdoctoral fellowship), also resulting in a limited number of recruited PhD students (1 defended thesis and 1 ongoing) and postdoctoral students (1 during the period and 1 expected for 2023). Only one invitation and a poster presentation in a national meeting in 2018. Except three conferences in national and local meetings, the committee did not notice any invitation in international meetings of researchers.

No information is provided for vulgarisation and industry transfer.

The team mentioned as weakness its limited lab/office space, which severely limits the ability to work and to recruit under good conditions. Some space was allocated to the team after the departure of the team 3, but limited space is still one of the general problems of the unit and of this team in particular.

### Analysis of the team's trajectory

The team's trajectory is mainly in the continuity of their previous work and ongoing projects. It is based on the published or preliminary results of the team. Their ambitious program includes four projects related to ribosome-associated quality controls, mRNA duplexes and the role of tRNA processing activities for mRNA metabolism. The working hypotheses are well described and three out of four projects will benefit from national or international collaborations with complementary expertise. The project that aims to define cofactors and mechanisms coupling mRNA and nascent peptides decays under ribosome collisions will be done in collaboration with IJM on proteomics and UPC on structural biology. The team just obtained an ANR 2023 grant as coordinator on the coupling pathways of quality controls associated with ribosomes. The project on the



characterisation of RNA foci and related RNA-protein aggregates is based on the collaboration with a Canadian team and will include a collaboration with IJM for imaging and proteomics analyses. The project that aims to characterising mRNA duplexes and their regulation will be performed as a partner of ANR 2022 grant. Human and financial resources are already secured for the two main projects with two ANR grants, or need to be secured for the other projects.

## RECOMMENDATIONS TO THE TEAM

The team is encouraged to continue its efforts in securing sufficient funding for its projects and to ensure the recruitment of young researchers (PhD and postdoctoral students). The committee recommends adopting team research programs to available human and financial resources by focusing on the main projects. A point of vigilance should also be to ensure regular publications of the results. Participation of the team in international and national meetings, in particular for PhD students and postdoctoral students is highly recommended. The team should also think as to how they can contribute to science outreach.

**Team 2:** Membrane dynamics and mitochondrial fusion  
 Name of the supervisor: Mr Mickael Cohen

## THEMES OF THE TEAM

The team works on the regulation of mitochondrial homeostasis that is governed by membrane fission and fusion and the proteins involved in these mechanisms. They belong to the family of Dynamin-Related Proteins (DRPs) that are large GTPases that bind to the membranes and shape the form of lipid bilayers. In particular, they study the mitofusins whose function is controlled by the Ubiquitin-Proteasome System (UPS) in relation to Mitophagy. The model organisms are *Saccharomyces cerevisiae* and *Chlamydomonas reinhardtii*.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The report was highly favorable and there were no specific recommendations.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	0
Directeurs de recherche et assimilés	1
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>3</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	2
Doctorants	1
<b>Sous-total personnels non permanents en activité</b>	<b>3</b>
<b>Total personnels</b>	<b>6</b>

## EVALUATION

### Overall assessment of the team

This team benefits of an excellent reputation in the field of mitochondrial homeostasis and it has an excellent to outstanding scientific production. The attractiveness and visibility of this team are excellent. This team is strongly involved in the dissemination to the public so its outreach activity is very good to excellent.

### Strengths and possibilities linked to the context

Among the major results obtained by the team, they accumulated several data on the structure-function analysis of the mitofusin Fzo1. These investigations are still ongoing. In parallel, they investigated the role of CrFzl, the Fzo1 homologue of the green algae *Chlamydomonas reinhardtii* and they found that it is located in the chloroplast and it promotes fusion of thylakoids thereby regulating the photosynthesis. Regarding the regulation of mitofusin-mediated fusion by the Ubiquitin-Proteasome System in vivo, the team showed that Mdm30-mediated degradation of Fzo1 is required for mitochondrial fusion upon a decrease in the desaturation of Fatty Acids (FA). In addition, they found that the overexpression of Fzo1 in yeast favours the contacts between

Peroxisomes and Mitochondria (in coll. with the Weizmann Institute, Israel). These contacts allow the transit of peroxisomal citrate into mitochondria to feed the TCA cycle, thereby stimulating the mitochondrial membrane potential and maintaining an efficient mitochondrial fusion upon high FA desaturation. Besides, the interaction between ERMES components (a protein complex promoting contacts between the ER and outer mitochondrial membranes) and putative partners has been investigated by Co-IP combined with mass spectrometry. Finally, the analysis of mitochondrial morphology in yeast by Super-Resolution (SR) fluorescence microscopy revealed an unprecedented morphology formed by numerous and regular constrictions of the mitochondrial network which is promoted by the dynamin Dnm1 and allows an optimal oxidative phosphorylation (in coll. with the Pasteur Institute).

The quality of the publications is excellent to outstanding with two publications in Nat. Comm., one as a corresponding author. The team has published fifteen publications of original articles or reviews including eleven as corresponding and/or first author (denoted by \*): Nat Meth. 2022; BBA Bioenerg 2022\* (x2) and 2020\*; Sci. Rep 2022 and 2017\*; Autophagy 2021; Mitochondrion 2019\*; Data in Brief 2019\*; JMB 2019; PLoS Genetics 2019\*; F1000Research 2018\*; Nat Comm 2018 and 2017\*; Autophagy 2017\*.

The team is composed of three permanent members (1 DR, promoted in 2018 with an HDR defended in 2019, 1CRCN and 1 IEHC, promoted in 2020) and has recruited four PD and two PhD students. The team successfully secured two ANR grants (one is running until 2024). The labex Dynamo also provided two PD Fellowships (3 and 2 years) and an FRM fellowship was awarded for a fourth year of PhD. They supervised six Master students. The visibility/attractiveness of the team is excellent, especially at the national level, and the PI is notably involved in the organisation of the 21st meeting of the Groupe Français de Bioénergétique (2021) and was the president of the GFB (2019–2021). In addition, the PI is strongly involved in the steering board of the labex Dynamo, in charge of one Task since 2019, and one team member is an expert for ITRF (Ministry of Higher Education and Research) and was involved in a workshop in the MiFoBio school (2023). Team members participated to seven PhD or HDR juries and were involved in three recruitment committees.

Team members contributed to the development of ShareLoc, an open platform for sharing super-resolution microscopy data in order to improve Artificial Intelligence-assisted reconstruction of SR imaging datasets. They also took part on several occasions to scientific vulgarisation events (newspaper, radio, web series). *The outreach activities are overall very good to excellent.*

## Weaknesses and risks linked to the context

The PI participated to several meetings including one invitation to a French meeting (SFFBBM, 2018) and one seminar in France (2022), but the PI was invited only once as a speaker in an international meeting: EBEC in Aix-en-Provence (2022). However, this remark must be tempered by the sanitary crisis that they had to face during the period of the contract.

## Analysis of the team's trajectory

The projects are mainly in the continuity of the main axes developed during the period under evaluation and are timely, very well-defined, and in line with the expertise that the team has developed over the years. An extension of the current projects concerns an enzyme expressed in mammalian striated muscles involved in the synthesis of very long chain fatty acids. A deficiency in this enzyme causes reduced fusion of myoblasts during muscle development leading to myopathy and this project will be addressed in collaboration with the Ecole Veterinaire de Maison-Alfort.

Besides, the PI will become the unit director for the next contract.

## RECOMMENDATIONS TO THE TEAM

The visibility of the team at the national level is excellent but it might be reinforced at the international level, possibly by participating to the organisation of an international meeting or workshop, or through the participation to more international meetings.

**Team 3:** Post-translational redox regulation  
 Name of the supervisor: Mr Stéphane Lemaire

## THEMES OF THE TEAM

The research themes of the team 3 (Systems and Synthetic Biology of Microalgae) focus on three main areas: (1) the mechanisms of carbon fixation by photosynthesis, (2) adaptation to environmental stress, and (3) the Redox signalling network. To answer these questions, the team mainly uses a unicellular algae model, *Chlamydomonas reinhardtii*, but also other models such as yeast, cyanobacteria or the plant *Arabidopsis thaliana*. More broadly, the team addresses questions concerning the ability of microorganisms to fix CO<sub>2</sub> and respond to environmental challenges. The team has also redirected its research towards synthetic biology approaches using microalgae and also developed technologies for digital storage on DNA.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous report recommended strengthening interactions with the social, economic and cultural environment. The team has strongly reinforced these aspects and is now outstanding in terms of evaluation, for example by coordinating a Sesame filière program, creating a start-up, participating in broadcasts in various media, as mentioned in the 'Strengths and possibilities' section of the report. Furthermore, using a technology developed and patented by the team for storing information on DNA, two historical texts – La déclaration des droits de l'Homme et du citoyen – and – La déclaration des droits de la Femme et de la citoyenne – were encoded on DNA, and deposited in the National Archives in Paris.

It was also recommended that non-HDR members of the team should defend their HDR as soon as possible. Two of the three assistant professors defend their HDR during the contract (one in 2020, one 2022).

The previous report also recommended participating or coordinate European Programs. During the last five years, the team strongly reinforced its international visibility including European network by example as coordinator of a European project on synthetic biology based on MoClo kit.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	0
Directeurs de recherche et assimilés	1
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>3</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	2
Doctorants	1
<b>Sous-total personnels non permanents en activité</b>	<b>3</b>
<b>Total personnels</b>	<b>6</b>

## EVALUATION

### Overall assessment of the team

The team develops high-level research activities with an outstanding scientific production. The attractiveness and visibility of the team are also outstanding. The team has clearly shifted during the actual contract towards synthetic biology topics. Its PI has shown its ability to obtain significant funding and to develop collaborations with the socio-economic world and the industrial sector.

### Strengths and possibilities linked to the context

The team develops and has positioned itself on synthetic biology approaches to answer major societal challenges related to CO<sub>2</sub> fixation to produce, with micro algae, organic molecules with biotechnological applications in the industrial sector. They developed a detailed understanding of the mechanisms involved in the Calvin-Benson cycle notably by solving the structure of phosphoribulokinase, by studying post-translational modifications of proteins involved in redox and understanding the ability of *Chlamydomonas* to enhance its stress resistance by aggregating. In conjunction with a European consortium, they have also developed a modular cloning tool for *Chlamydomonas* (MoClo), available to the whole community.

The scientific output of the team and of its PI is outstanding, with 35 publications over the reference period. The vast majority are signed by the team leader and team members (26/35).

The visibility of the team and its PI at national and international level is also outstanding, with for example, 26 invited conferences and 29 invited seminars, peer review of grant applications both national (ANR, Sorbonne University) and international.

The PI and its colleagues in the team, showed their capacity to obtain funding from different sources (ANR, Sorbonne University Emergence, CNRS innovation, Pierre Fabre etc..). They coordinated two ANR, and partner of four ANR. On the whole, the team obtained around 4M€ of funding from different sources between 2018 and 2023.

The outreach of the team is outstanding. Team members interact at different levels with society and the socio-economic world. The team participates in various events organised by Sorbonne University, hosted an IGEM group and beyond the academic world, the PI has made interventions in various regional and national media (TV, press).

The team filed two patents on digital information storage in the form of DNA. It created a start-up, Biomemory, which raised €5 million.

In addition, a member of the team, in collaboration with another team member, is coordinating a Sesame Filière program, Biofonderie Bioconvergence with a funding of 2.3 M€ (2023–2026) and has secured 10.5 M€ for the next five years. This is a real opportunity for the team both in terms of space for the laboratory and to further strengthen the team visibility at national and international level.

### Weaknesses and risks linked to the context

The team is led by a DR CNRS and they are three assistant professors in the team with a full teaching load. Each member of the team is responsible for their own project and depends on obtaining external sources of funding. The critical mass of the team might be a limiting factor in the development of current or future projects and the establishment of international collaborations.

### Analysis of the team's trajectory

The team and its five members have left the unit in 2021 to join another research unit in Sorbonne University (UMR 7238). The present committee cannot evaluate the team trajectory as part of the LBMCE unit evaluation, as the team has left the unit since 2021 to join another unit in Sorbonne University (UMR7238).

## RECOMMENDATIONS TO THE TEAM

The PI should apply to international grants, specially from ERC, such as those dedicated to synthetic biology or to breakthrough innovation.

Clearly, the recruitment of new permanent members of the team is a major challenge for the future.

**Team 4:** Molecular chaperones and biogenesis of macromolecular assemblies

Name of the supervisor: Mr Philippe Meyer

## THEMES OF THE TEAM

This team works on chaperones and seeks to understand the mechanisms underlying the recognition of their client proteins. Their work is split into three axes: (i) the regulation of Hsp90 client loading by co-chaperones, (ii) the mechanism of client complex assembly catalysed by the Hsp90-R2TP complex, and (iii) the characterisation of Hsp70/Hsp90-assisted protein folding mechanism.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

It was recommended by the previous Hcéres committee that:

—'The number of papers coming directly from the team should be increased. The team leader is encouraged to increase his activity and focus on the last author papers from his work.'

This recommendation was unfortunately not followed during the period under evaluation. See the assessment below.

—'The international visibility could be increased, e.g. by increased conference attendance. More mentoring of the PI and the team could also help in finishing projects. It seems that some exciting results achieved during the past years have not been published yet. This should be the focus of the near future.' This comment was in the same line as the previous one and despite some mentoring by the direction of the unit, no improvement was made by the PI during the period under evaluation to increase the number of publications.

—'Team size should be increased as planned.'

This recommendation was not followed despite attempts to recruit at the CNRS one of the postdoctoral fellows of the team.

—'The planned and ongoing projects are exciting and the planned focus should be kept. The use of additional technologies such as H/DX is an excellent strategy and should be continued.'

The use of H/D exchange has indeed been pursued by the team.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	0
Directeurs de recherche et assimilés	0
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>2</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	1
Doctorants	0
<b>Sous-total personnels non permanents en activité</b>	<b>1</b>
<b>Total personnels</b>	<b>3</b>

## EVALUATION

### Overall assessment of the team

The scientific production of this team is good. It has a very good recognition for its expertise in the molecular chaperone field, which is tackled by a quite unique expertise in H/D exchange, complementary to global structural approaches.

### Strengths and possibilities linked to the context

The team has developed over the years a unique expertise in the field of molecular chaperones, in particular through the use of the H/D exchange technique. They notably characterise the nucleoside diphosphate kinase as a case study to master the H/D exchange approach and this led to the publications of two papers in *Biochemistry* (2017 and 2019) that were signed by a postdoctoral student in the team as the corresponding author. A third publication was a result of a collaborative work on the HSP90 co-chaperone R2TP complex involved in the assembly of molecular machines. They notably showed that the dimerisation of RPAP3 is required for activation of HSP90. This led to a publication in *Structure* (2019) that the PI signed as a co-corresponding author. In total, the scientific production of the team is good with three publications in the leading position in the period under evaluation.

The lab recruited four postdoctoral students (2 were funded by the labex Dynamo and 1 by the ARC foundation) and it trained fourteen students. The team got two ANR grants as partners and also an Embo Short-term fellowship to carry out experiments in a foreign country.

The PI was invited to one international meeting (9th International Conference on the Hsp90 chaperone machine, 2018) and one of the postdoctoral students to two international meetings (2017 and 2019) plus one seminar abroad (Boston, USA, 2018). Overall, the visibility/attractiveness of this team is very good.

The PI participated in meetings with high school students to present scientific research (in 2022) and therefore the interaction with the general public is good.

### Weaknesses and risks linked to the context

In total, only three publications were released during the period under evaluation where the team was in leading positions and the PI was the co-corresponding author in only one of them. In addition, only one of these three publications focused on the molecular chaperones, the main research theme of this team. No publication dealing with molecular chaperones was published since 2019.

The equipment to perform H/D exchange experiments is not available in the unit so these experiments have to be carried out in collaboration, which might slow down the pace of publication.

The team starts to use cryo-EM techniques but this is also in collaboration with a team in Toulouse.

No PhD students were trained during the last contract.

### Analysis of the team's trajectory

The folding of the luciferase by Hsp90 has been thoroughly studied and one paper is in preparation.

Regarding the RPAP3-PIH1D1, it was shown that it stimulates the ATPase activity of HSP70 and the dissociation of the client protein from HSP70, and another paper is in preparation on this second topic.

The interactions of RPAP3-PIH1D with HSP90 and HSP70 in the presence of nucleotides or analogues have also been characterised and this is currently completed by cryo-EM analysis (in collaboration with the LBME in Toulouse). Another project concerns the folding of protein kinase by HSP70 and HSP90 and in particular the oncogenic protein kinase BRAF.

It is also planned to study the chaperones and chaperone receptors from *C. reinhardtii* or *A. thaliana* chloroplaste, and *S. cerevisiae* or *H. sapien* mitochondria.

One ANR as participant has just been obtained in 2023.

## RECOMMENDATIONS TO THE TEAM

The committee is very much concerned with the fact that the team has not published any paper in the lead author since 2019. No publications are presently submitted despite 'substantial amount of data which is awaiting publication very soon' as pointed out by the unit director in the self-evaluation report. The committee urges the PI to publish the manuscripts in preparation as soon as possible, not only for the sake of the PI but also for the postdoctoral students career prospects. The PI should increase its level of publication as a corresponding author.

Given this paucity of publications, the committee recommends the PI to focus on fewer projects instead of the multiple ones that are planned in the research trajectory.



**Team 5:** Telomere biology  
 Name of the supervisor: Ms Maria Teresa Teixeira

## THEMES OF THE TEAM

The research focus of the team 'Telomere Biology' consists in understanding the pathways leading to replicative senescence induced by telomere length shortening. Specifically, the team investigates how the extent of cell-to-cell telomere variations defines the cell proliferation limit. The team approaches these questions by combining genetics, cell imaging, microfluidics, and mathematical modelling in a multidisciplinary fashion. The main model system of the team is the budding yeast *Saccharomyces cerevisiae*.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The specific recommendations made for the team in the previous evaluation report were to consider getting more engaged with the public to promote its visibility, to sort out the space issue to secure its future growth and to enhance the research potential by the interdisciplinary collaborations. All these recommendations were largely addressed by the team when possible.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	1
Directeurs de recherche et assimilés	1
Chargés de recherche et assimilés	0
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>3</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	2
Doctorants	3
<b>Sous-total personnels non permanents en activité</b>	<b>5</b>
<b>Total personnels</b>	<b>8</b>

## EVALUATION

### Overall assessment of the team

The team performs original and interdisciplinary research focused on telomere biology and how this affects cellular senescence. The team has published at excellent to outstanding level (including a paper *Genes & Dev* in 2018, and Scientific report in 2018, as well as *Cell* in 2017 in a collaborative project). The team has an outstanding attractiveness; it is very well funded and has a good size with a proper balance of permanent positions and younger scientist as PhD students and postdoctoral students. Interaction with the lay public is excellent.

## Strengths and possibilities linked to the context

During the evaluation period, the team had an excellent/outstanding research output with four research articles as corresponding author, with an additional one listed (Genetics, 2023) outside the evaluation period. The publication in *Genes & Dev*, 2018 is a high-profile paper showing how adaptation contributes to genome instability dynamics during replicative senescence. There are also two articles with international collaborators, including a highly cited manuscript published in *Cell*, 2017 and four review articles (plus one in *Gene* in 2023). Three research articles and one review were co-signed with a former member of the team that has recently started his own team. The publications are focused around the team main research interest and highlight the multidisciplinary approaches that the team has developed in the past years.

The team attractiveness is outstanding in terms of recruiting internationally both PhD and postdoctoral student. This probably reflects the team attractive research topic and the multidisciplinary approaches used. The team leader is an internationally recognised researcher with prestigious recognition before the evaluation period such as the Embo YIP and ERC grant. Beyond the group leader, the team feature two permanent members: Maître de Conférences, UPMC Sorbonne Université and lab manager, IE CNRS, ensuring a solid structure to the team. The team has the appropriate collaborations that complete their expertise. The team has been strongly supported throughout the evaluation period from prestigious grant call from ANR, INCA and FRM (notably two consecutive rounds of FRM teams). One team member has left to set up his own team, further highlighting the strong mentoring and scientific excellence merit of the team.

The team is active at the societal level with a member of the CLAS Pierre and Marie Curie of the CAES of the CNRS and PI taught a course to high school teachers 'Journées ENS/UPA' (2017)

## Weaknesses and risks linked to the context

Despite the team is very attractive, recruiting people with a multidisciplinary profile remains challenging and this has somewhat slowed down finalising some of the projects. The directorship of the unit of the PI might also has contributed to this point.

The team appears not to have interactions with the industry, which could provide additional and complementary resources. This is also the case for further translational applications of the research program with possible interactions with the clinicians.

## Analysis of the team's trajectory

The team future research programme is largely based on the continuation of the team long-term interest in telomere biology. The team has recently embraced novel technologies and disciplines and this will further pursuit in the coming years. Specifically, this includes the usage of microfluidics to reveal cell heterogeneity, mathematical modelling to model senescence and telomeres sequencing. These cutting-edge scientific approaches provide a novel view of the interplay between telomere length and senescence and are likely to maintain the research excellence of this team.

## RECOMMENDATIONS TO THE TEAM

The team is encouraged to maintain their excellent research standards and scientific output. Continuing publishing at high levels will ensure continuing to attract important funding that will enable them to recruit PhD and postdoctoral students to drive the main research lines. The current team composition is a good fit for the research program and maintaining the network of high-level collaborations is highly recommended. Overall, this team has excelled in all fronts and the panel wish to continue at this level in the coming years.

## CONDUCT OF THE INTERVIEWS

### Date

**Start:** 16 novembre 2023 à 8 h 30

**End:** 16 novembre 2023 à 18 h

**Interview conducted : online**

### INTERVIEW SCHEDULE

#### **Schedule of LBMCE Unit**

**November 16th:** Zoom Link

<https://hceres-fr.zoom.us/j/4488995576?pwd=R3lvOUplUL0vRlRlVjVjQVc1NndOcEdndz09>

**8:00 – 8:15** Preliminary meeting of the expert committee (closed hearing)

**8:15 – 8:30** Presentation of the Hcéres evaluation to the unit (SO/SVE3)

**8:30 – 9:00** Presentation of the main outcomes of the Unit by the Director (15 mn presentation+ 15 mn questions)

**9:00-9:30** Team 1 'Functional Regulation and Surveillance of RNA'-Lionel Benard

**9:30-9:35 Short Debriefing**

**9:35-10:05** Team 2 'Membrane dynamics and mitochondrial fusion'-Mickael Cohen

**10:05-10:10 Short Debriefing**

**10:10-10 : 30** Team 3 « Post-translational redox regulation », Stéphane Lemaire (Left in 2019)

**10:30-10:35 Short Debriefing**

**10:35-10:50 Break**

**10:50-11:20** Team 4 'Molecular chaperones and biogenesis of macromolecular assemblies' – Philippe Meyer

**11:20-11:25 Short Debriefing**

**11:25-11:55** Team 5 'Telomere biology'— Maria Teresa Teixeira

**11:55-12:00 Short Debriefing**

**12:00-12:30** Presentation of the Unit trajectory by the director (15 mn presentation+ 15 mn questions; all Pls present)

**12:30-12:55 Short Committee debriefing**

**12:55-2 p.m. Lunch**

**2 p.m.-2:30 p.m.** Meeting with technical and administrative staff (in French)

**2:30 p.m.-3 p.m.** Meeting with PhD students and post-docs

**3 p.m.-3:30 p.m.** Meeting with researchers and teaching-researchers

**3:30 p.m.-4 p.m.** Meeting with supervising bodies

**4 p.m.-4:30 p.m. Break/Short Debriefing**

**4:30 p.m.-4:45 p.m.** Meeting with the head of the unit/deputy director

**4:45 p.m.-5:30 p.m. Committee meeting/final debrief: overview of all teams, Unit Trajectory update of the reports etc..**

### PARTICULAR POINT TO BE MENTIONED

N/A

## GENERAL OBSERVATIONS OF THE SUPERVISORS

Marie-Aude Vitrani  
Vice-Présidente Vie institutionnelle et démarche  
participative  
Sorbonne Université

à

Monsieur Eric Saint-Aman  
Directeur du Département d'évaluation de la recherche  
HCERES – Haut conseil de l'évaluation de la recherche  
et de l'enseignement supérieur  
2 rue Albert Einstein  
75013 Paris

Paris, le 21 février 2024

Objet : Rapport d'évaluation LBMCE - Laboratoire de biologie moléculaire et cellulaire des eucaryotes

Cher Collègue,

Sorbonne Université vous remercie ainsi que tous les membres du comité HCERES pour le travail d'expertise réalisé sur l'unité de recherche « LBMCE ».

Sorbonne Université n'a aucune observation de portée générale à formuler sur le rapport d'évaluation transmis.

Je vous prie d'agréer, Cher Collègue, l'expression de mes cordiales salutations

**Marie-Aude Vitrani**  
Vice-Présidente Vie institutionnelle  
et démarche participative



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